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Measuring Brand Image based on Network Analysis

- An Exploratory Study -

네트워크 분석을 이용한
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Measuring Brand Image based on Network Analysis

– An Exploratory Study –

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Abstract

Measuring Brand Image based on Network Analysis: An Exploratory Study

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Rapid technological advances, including mobile device, social network service, and real-time information flow, are shaping market structures and brand management practices various ways. Power is shift from company to customers in a digital connected-world. The previous concept of brand – such as brand awareness, brand value, brand image, and brand equity – cannot measure the actual power of brand which

leverages to actual purchase. However, present definition and measurements of brand are still on the statue of a traditional literature.

The goal of this study is to present the problem of previous measurements and explore a new method for measuring brand more directly in digital connected world. The idea starts form the proverb of “A man is known by the company he keeps.” As the saying, we can know the brands by the co–purchased product networks that links each other. We suggest a framework of network analysis by clustering brands of cosmetic brands on Amazon.com – the frequency of brand products purchase together. To elaborate, we analyze product networks of brand that extracted from the actual purchase data, not based on the cognitive aspect of consumer or the finance aspects. Since the topic has not been examined in prior research, exploratory research was conducted.

This research extends the traditional conceptualization of brand equity and attempts to reflect the social change by adopting a network perspective. Based on the conceptualization, this paper proposes a more appropriate measure for brand image in a digital connected world, and it will provide insights to marketers to manage their brands more wisely and concisely.

Keyword : Brand, Brand Image, Electronic Commerce, Network Analysis,
Co-purchase Network, Cosmetics

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1 Introduction

Along with the Internet technologies, the increasing rate of mobile device usage which can access to real-time information flow and emerging social networking services (Facebook, Snapchat, LinkedIn, etc.) have led to various changes in these days (Gensler, Völckner, & Wiertz, 2013).

Recent studies have suggested consumers have strong information power compared to the past (Nielsen, 2014; Baer, 2015; Forbes, 2015; Gürhan-Canli, Hayran, & Sarial-Abi, 2016). With the increasing rate of mobile device penetration and the amount of time spent on mobile phones, consumers can reach brands get information more easily through tremendous channels—website, other consumers’ reviews, etc. In reality, more consumers share service experiences on the timelines of the responses they receive and demand faster and more effective responses on social media, according to the Forbes (2015),

The emergence of *a number of explicit hyperlinked electronic networks* that link products and consumers is another important by-product of Internet and the social media (Oestreicher–Singer & Sundararajan, 2010, Oestreicher–Singer, Libai, & Carmi, 2013). For example, Facebook connects people to each other, LinkedIn links professionals, and Amazon creates product networks, in which a large number of items – represented by a collection of web pages – are linked to one another.

As a result, new technological advances have reshaped market structures in various ways and transformed the dynamic between consumers and brands. First, we can observe a shift of power from the marketer to the consumer on digital platforms, creating novel changes in brand management (Labreque et al., 2013; Erdem, Keller, & Pieters, 2016; Gürhan–Canli et al., 2016). Whereas in the past, the brand–consumer relationship was primarily brand or company driven because the opportunity for effective two–way interaction was limited, this relationship is and will increasingly be jointly driven and even independent of the company.

Also, due to the real-time information network especially between consumers, traditional perspectives and measures of brands such as—Brand Awareness, Brand Power, Brand Equity and so on—cannot guarantee the actual purchase any more. In recent survey, which conducted by Trend Monitor in Korea (2016), 89.8% of Korean consumers responded that they do not purchase right away even though they know or are familiar with the brand. Respondents said that they could access to lots of information by using their smartphones anytime and anywhere, so that they will decide whether purchase the products or services based on the information. In other words, most of consumers will not purchase certain brands that they are familiar with, even if certain brands are regarded as the strong brands by traditional method.

We need to focus our attention on how the digital developments specifically influence the brand. How are we to define and measure a brand in digital connected world? In this paper, we propose a method for assessing a brand more directly in the network environment: *by comparing the networks of each brands in a given large-scale product network* on E-commerce website. Contrary to the traditional methods which are based on the cognitive aspect of consumer or the finance

aspects of brand, a proposed method evaluates brand based on the *actual purchase action* of customers on E-commerce. Because the topic has not been examined in prior research, exploratory research was conducted.

We begin by reviewing previous works related this study in chapter 2. Chapter 3 describes the overall procedure and methodology in detail. The results are explained in the chapter 4. Finally, we summarize our contributions with suggestions for future studies.

2 Backgrounds

2.1 Brand

In marketing literature, brand management has been regarded as an important concept because well-managed brands can bring the prime points of differentiation between competitors, and it can be critical to the success of companies. Therefore, many previous researches are conducted to how to manage brands strategically.

However, the definition of a brand is one of the hottest points of disagreement between researchers (Wood, 2000; Kapferer, 2012). Each researcher concludes his or her own definition and philosophy, and the problem gets more acute when it comes to measurement.

2.1.1 Definition of Brand

In previous literature about the definition of brand, two big approaches have discussed in long time: Company-oriented vs. Consumer-based. First, company-oriented approach focused on

visual features as differentiating mechanism given by company. American Marketing Association (1960), Aaker (1991), and Stanton et al., (1991) define Brand as a name, logo, term, design, symbol, or any other feature that identifies one seller's good or service as distinct from those of other sellers.

However, consumer-oriented approach focused on consumers' mental associations. They define Brand as a set of cognitive associations held by consumer, as adding to the perceived value of a product or service from the marketing communication (Aaker, 1996; Keller, 1993).

Internet and mobile device has opened up connected world, so some researchers defined Brand as network-oriented approach in order to reflect the digital world. Kapferer (2012), Yun (2015), and Ramaswamy (2016) explained brand as *a system of mental association which are interconnected*. In detail, brand is that *mental associations and relationships built over time among customers, products, services, communications, or distributors,*

and all of them are *in a network* so that acting on one impacts some others.

In this paper, the definition of the word brand is in accordance with Kapferer, Yun, and Ramaswamy's concept.

Table 1 Overview of brand's definition

Approach	Components of definition	
Company-oriented	Visual features as differentiating mechanism (logo, symbol, design ...)	AMA, 1960 Stanton et al., 1991 Aaker, 1991
Consumer-oriented	A set of mental associations as adding to the perceived value of a product or service.	Aaker, 1996 Keller, 1993
Network-oriented	A system of mental associations <i>in a network</i> so that acting on one impacts others	Kapferer, 2012 Yun, 2015 Ramaswamy, 2016

2.1.2 Brand Equity and Measurements

Most researchers and practitioners in marketing field regarded brand equity as a very important concept in business practice because company can gain competitive advantage through successful brands.

Leuthesser (1988) define Brand Equity as the set of associations and behavior on the part of a brand's customers, channel members and parent corporation that permits the brand to earn greater volume or greater margins than it could without the brand name.

However, previous literature about the brand equity can be summarized as two big perspectives: Market-based vs. Consumer-based.

Table 2 Overview of brand equity

Brand Equity	Components	
Consumer-based	Brand loyalty, Brand awareness, Perceived Quality, Associations, Market Behavior	Aaker, 1991,1996
	Brand Awareness, Brand Image (Characteristics of Brand Associations, Relationships among Brand Associations)	Keller, 1993
Market-based	Brand Strength Index(BSI), Brand Loyalty Rate, Brand Revenues	BrandFinance Interbrand,etc

First, Market-based brand equity is from a financial market's point of view where the asset value of a brand is calculated (Farquhar et al., 1991; Simon and Sullivan, 1990)

known as Interbrand's or Brand Finance's. As an example, Brand Finance estimates brand value using the *Royalty Relief methodology* which determines the value a company would be willing to pay to license its brand as if it did not own it, and announces the most valuable brands annually.

Figure 1 Brand Finance's methodology

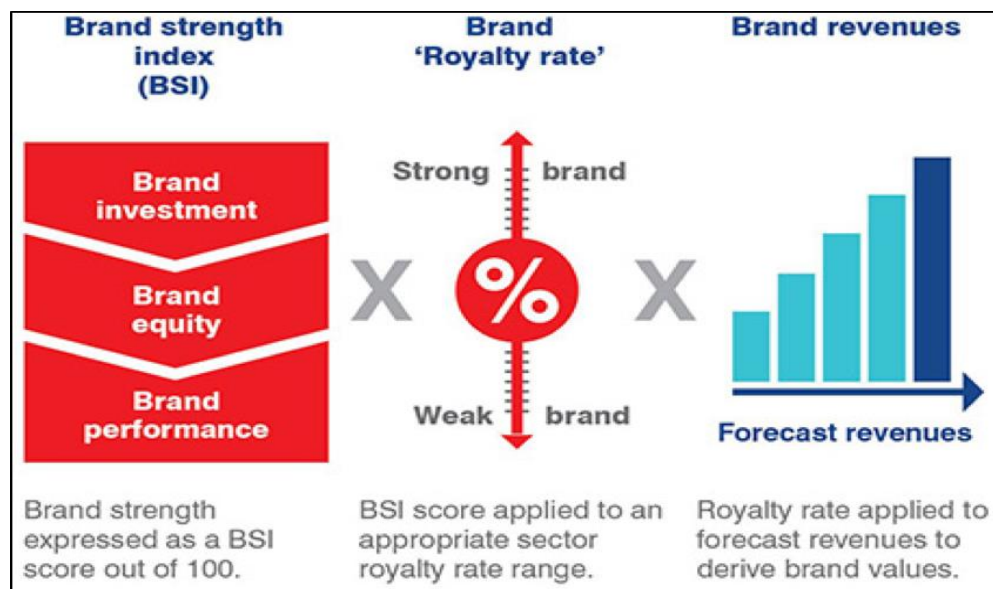
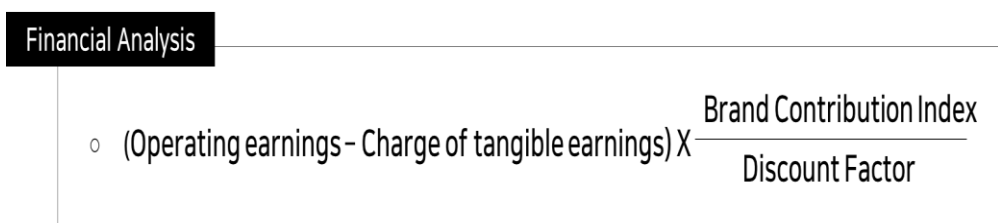


Figure 2 Interbrand's methodology



출처: Interbrand, 2012

On the other hand, consumer-based brand equity is evaluated based on the consumer's response to a brand name (Keller, 1993; Shocker et al., 1994; Aaker, 1996). It refers to the reactions to the branding campaign from consumers who have knowledge of the brand in varying. Table 3 (in the next page) explains Kevin L. Keller (2003)'s consumer-based brand equity model and components.

There are two approaches to measuring customer-based brand equity: indirect approach vs. direct approach. The indirect approach assesses potential sources of brand equity by measuring brand awareness or brand image. Survey or qualitative techniques are usually conducted to measure it – such as aided and unaided memory measures. The direct approach assesses more directly by evaluating the impact of brand knowledge on consumer response to different elements of the company's marketing communication. Thorough experiments, each group responds to the questionnaire about brand knowledge after being exposed the different marketing programs.

Table 3 Consumer–based Brand Equity (Keller, 2003)

Construct	Measure(s)	Purpose of measure(s)
Brand Awareness		
Recall	Correct identification of brand given product category or some other type of probe as cue	Capture “top-of-mind” accessibility of brand in memory
Recognition	Correct discrimination of brand as having been previously seen or heard	Capture potential irretrievability or availability of brand in memory
Brand Image		
<i>Characteristics of brand associations</i>		
Type	Free association tasks, projective techniques, depth interviews	Provide insight into nature of brand associations
Favorability	Ratings of evaluations of associations	Assess key dimension producing differential consumer response
Strength	Ratings of beliefs of association	Assess key dimension producing differential consumer response
<i>Relationships among brand associations</i>		
Uniqueness	Compare characteristics of associations with those of competitors (indirect measure)	Provide insight into the extent to which brand associations are not shared with other brands: assess key dimension producing differential consumer response
	Ask consumers what they consider to be the unique aspects of the brand (direct measure)	
Congruence	Compare patterns of associations across consumers (indirect measure)	Provide insight into the extent to which brand associations are shared, affecting their favorability, strength, or uniqueness
	Ask consumers conditional expectations about associations (direct measure)	
Leverage	Compare characteristics of secondary associations with those for a primary brand association (indirect measure)	Provide insight into the extent to which brand associations to a particular person, place, event, company, product class, etc. are linked to other associations. Producing secondary associations for the brand
	Ask consumers directly what inferences they would make about the brand based on the primary brand association (direct measure)	

2.1.3 Brand Image

Especially, *brand image* from components of consumer–based brand equity has drawn significant attention from academics

and practitioners because it is the key driver of brand equity by influencing on consumer behavior. Brand image could be defined as a brand that is brought to the consumer's mind by the brand association (Aaker 1991; Keller, 1993) or as consumer's thoughts and feelings about the brand (Roy and Banerjee, 2007).

Traditionally, a survey or qualitative techniques are conducted to evaluate brand image. By using the list of brand associations to measure brand image, interviewers ask certain brands to consumers, and then consumers pick up the words which are related to those brands, or ask open-ended questions about the association of brands to consumers. Table 4 is an example of measurements for brand image.

Table 4 Traditional measurements of brand image

Self-Reports									
<ul style="list-style-type: none"> ○ Please name <i>all the brands of cosmetics</i> you can think of. ○ What makes <i>Christian Dior</i> more recognizable than competing brands? ○ Overall, I think that <i>Christian Dior</i> is charming : 									
<i>disagree</i>	1	2	3	4	5	6	7	<i>agree</i>	
<ul style="list-style-type: none"> ○ I will buy <i>Christian Dior</i> in the next three months : 									
<i>disagree</i>	1	2	3	4	5	6	7	<i>agree</i>	

출처: Aaker 1997, Keller 2003

2.1.4 Summary

Even though many techniques are developed in brand field, most of them are indirect methods to estimate the mind of consumers. A method that measures brand based on purchase action is absence, as well.

However, we observed the change of consumer's life style and the way of information processing as explained in chapter 1. Calculating brand equity based on financial metrics and asking intentions or feeling about the brands to customers have limitations in the digital age: consumers have multiple sources of getting information, so brand awareness or image itself is not the significant factor to choose certain brand – they compare tremendous information on website in real time.

In this study, we will focus on brand image to be narrow down, and propose a new method of measuring it to capture this change in the world.

2.2 Amazon.com' s Co-purchasing Network

Online commerce has grown dramatically over the last decade. What is new and unique to electronic commerce is that online purchase data and interaction are *visible*. At online, products have always had associated products that are frequently co-purchased, and it forms *the shape of network* (Zan et al., 2007; Kim et al., 2009a, 2009b; Oestreicher-Singer & Sundararajan, 2010; Oestreicher-Singer et al., 2013).

A handful of researches are conducted to explore an electronic product network. First, as a basic attempt to define co-purchased networks, Hao et al. (2001) developed an application of forced-directed layout network to visualize co-purchases between products. The lot of latter research used this application to visualize co-purchase network. In addition, Stephen and Toubia (2010) show that links of product network can indeed create an effect beyond the underlying correlation between items. For

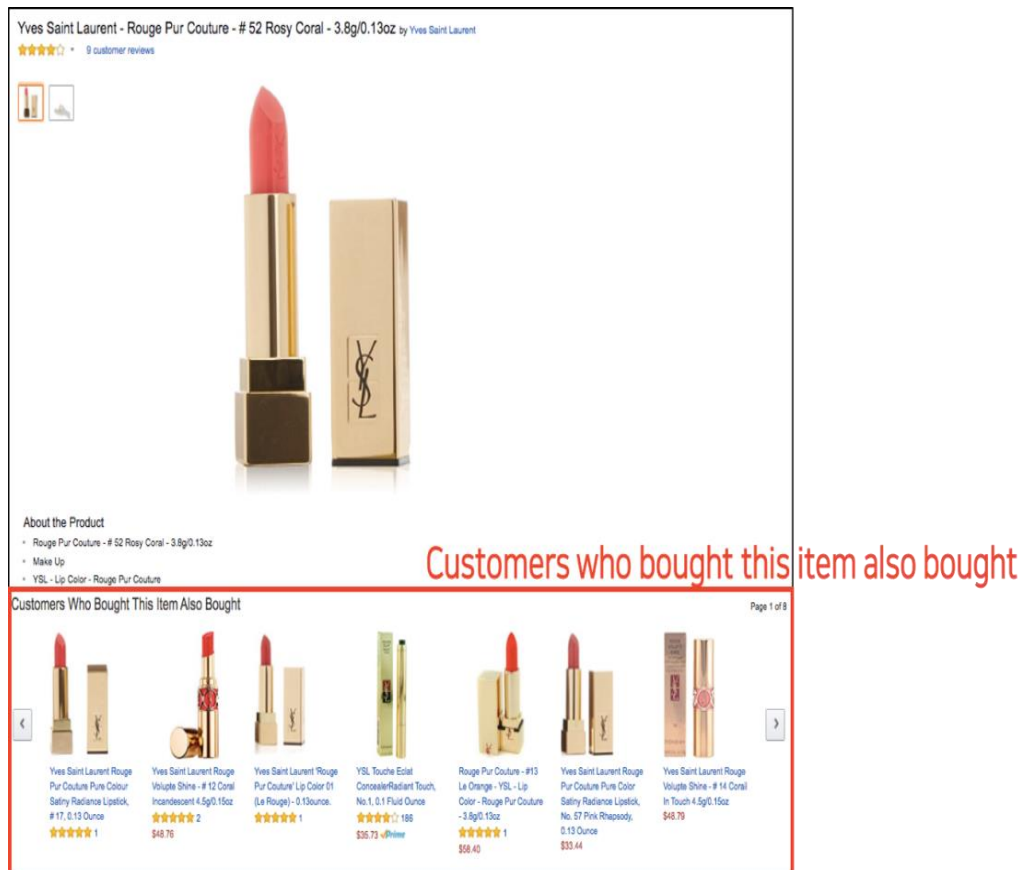
example, a higher number of inward links increases the profitability of the linked seller.

Second research stream of co-purchasing network is about recommendation system. Researchers extended the market basket analysis (MBN) into a network level and proposed a *co-purchased product network (CPN)*, which is extracted from customer-product bipartite network from the sales transaction data (Zan et al., 2007; Kim et al., 2009a, 2009b; Kim et al., 2012). To summarize, this research stream proves the effect of product network recommendations on search (Kim, Albuquerque, and Bronnenberg 2010, 2011), and on sales (De, Hu, and Rahman, 2010) and how link design can affect the effectiveness of those recommendations (Bodapati, 2008).

A representative example of a visible electronic product network is the co-purchase network of Amazon.com (Kim et al., 2011). This network provides us with dynamic snapshots of co-purchases by presenting its consumers with links to

complementary products made visible under the label “Customers who bought his item also bought...”. This is illustrated in Figure 3.

Figure 3 Amazon.com's co-purchase links



To sum up previous literatures, CPN of Amazon.com is a typical bipartite network of customer and product. We follow previous works to construct a network of products. Nodes represent products, and links represent the frequency of two

products purchased together. However, we take a different approach to utilizing CPN. Instead of analyzing the impact of network itself, we focus on visualizing networks that the products are *clustered on brand level* by modeling the data as product network.

In this study, we proposed this product network-based approach to define and measure brands in a new phenomenon which none of studies are conducted.

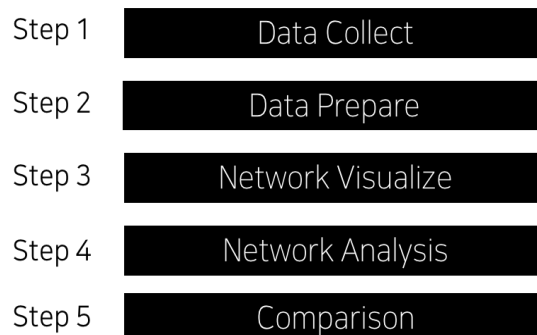
3 Methodology and Procedure

3.1 Overall Procedure

In previous section, we summarize that classic approach to brand and product network. This motivated us to propose a new methodology based on product networks to evaluate brands by clustering as a frequent co-purchased item set. A proposed methodology is inspired by the proverb of ‘A man is known by the company he keeps.’ As the saying, we can know the brands by the co-purchased product networks that links.

In this section, we will show how constructs these product network and how evaluates brands based on their product networks. Figure 4 shows an overall procedure of this study.

Figure 4 The procedure of network analysis



3.2 Specification of Procedure

3.2.1 Step 1: Data Collect

The study is based on a set of actual co-purchased data for over 10,000 products sold on Amazon.com. As a first attempt to evaluate brands based on a network analysis, we limit the products' category as Lipstick only.

We collect data by using a Python-based crawler, which starts from each cosmetic product and crawls the co-purchase links. For lipstick, there are total 922 pages which contains 48 products, and recommend items per each product are shown 30 items as maximum.

At each page, the crawler gathers and records information for items whose webpage it is on, as well as the co-purchase links on that page, and ends when the whole connected component of the data set is collected. This is repeated for each brand. The data collection began in November 2016 and ended in December 2016.

3.2.2 Step 2: Data Prepare

Product data is composed of ASIN, name, price, brand, category, and co-purchases item list. Co-purchase data is also composed of ASIN, name, price, brand, and category.

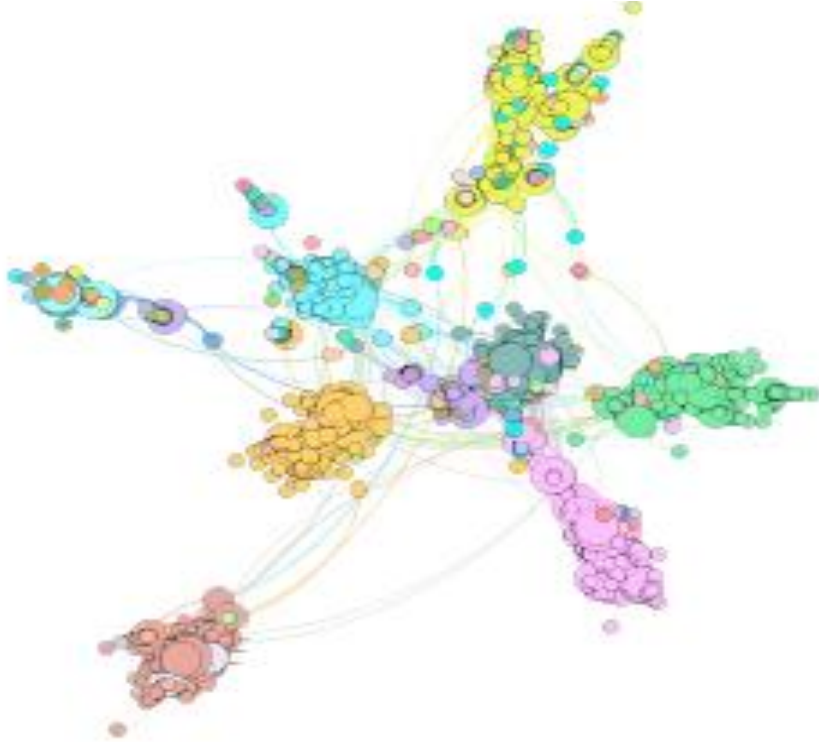
- ASIN (Amazon Standard Identification Number): A unique alphanumeric unique identifier given to each product by Amazon.com. Different series, color, or nations have different ASIN numbers.
- Price: The price on Amazon.com that day.
- Co-purchase items: ASINs of the items that appear as ‘Customers who bought this also bought’ or ‘Customers buy together’.
- Names: The name of cosmetics which contains information of brand name, category, series and color.
- Brands: The brand name of cosmetics. Unavailable to crawling, so we parsed from the product name.

However, there are too many brands due to the characteristics of e-commerce. To look how each cosmetic brand has a different formation of co-purchase, we decided to narrow down for 9 brands based on traditional brand positioning map: Chanel, Christian Dior, Bobbi Brown, Yves Saint Laurent (YSL), Laura Mercier, Giorgio Armani, MAC, Nars, and Maybelline New york.

3.2.3 Step 3: Network Visualize

The brands' networks are visualized by using Python's library named NetworkX and the program named Gephi which provides not only efficient network visualization and exploration techniques but also network analytics to deeper explanation. In this study, all networks visualized by Yifan Hu Propositional algorithms, which represents co-purchased networks well. An illustrative of the overall graph is presented in Figure 5.

Figure 5 The overall graph of the cosmetic co-purchase networks

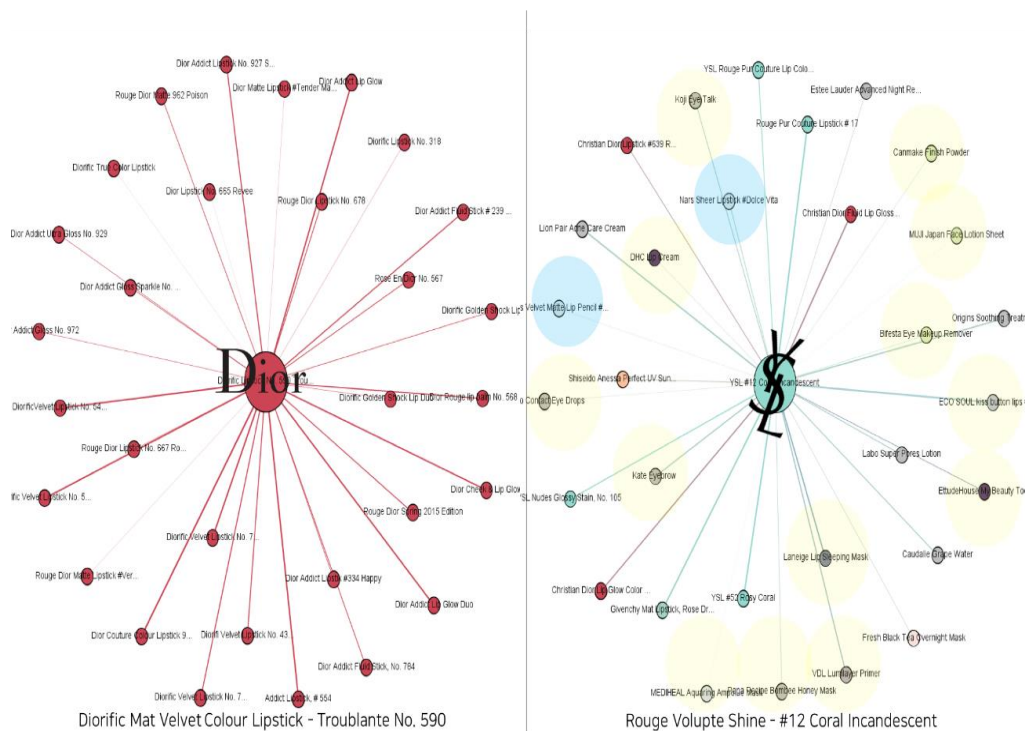


3.2.4 Step 4: Network Analysis

In this study, we clustered in two levels: products by brands with color and brands by perceived image in a traditional way. We set different color on brands and give an information about percentage of different brands to figure out which brands are associated to each brand. The figure 6 is an example of network analysis. It is visualized each product's co-purchased items of

Christian Dior and Yves Saint Laurant. We can easily figure out that Dior and YSL have totally different co-purchased brands.

Figure 6 Example of network analysis



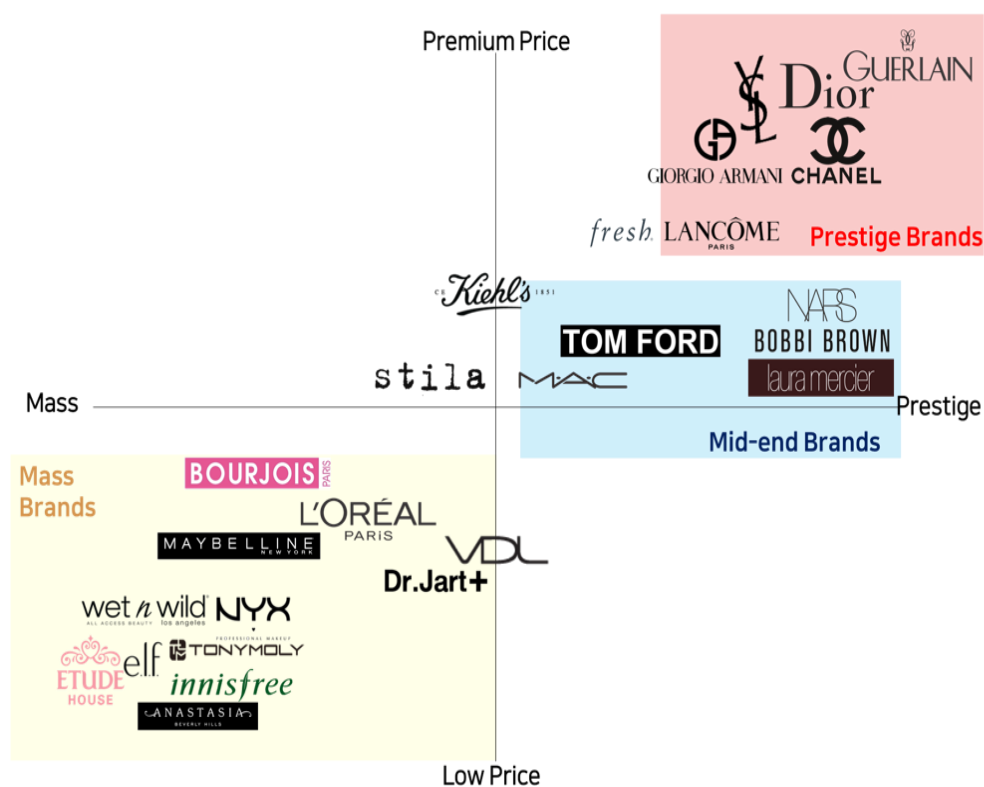
In order to compare the traditional way of evaluating brand (especially, brand image), we categorized brands as Prestige brands, Mid-end brands, and Mass brands based on UK Beauty

Industry (2012), and Rho (2011). The brands of each category will be shown on Figure 7.

3.2.5 Step 5: Comparison

To compare a proposed method over traditional method to evaluate brand, we adopt a traditional positioning map and categorization of cosmetics which was extracted by survey.

Figure 7 Traditional positioning map of cosmetics



Following the traditional categorization, Christian Dior, Chanel, Yves Saint Laurent, and Giorgio Armani are categorized as Prestige brands which customers perceived as prestige image with premium price. Laura Mercier, Nars, Bobbi Brown, and MAC are categorized as Mid-end brands which customers perceived as renowned but affordable compared to prestige brands. Mass brands are sold at drug store with low price and it includes Maybelline New York in this study.

We will compare the layout and the percentage of components on each brand's network to evaluate brands. To elaborate, if the prestige brand has a high percentage of products from same category, it can be explained that customer also actually perceived it as a prestige brand. On the other hand, the prestige brand has a low percentage of products from same category, customer may not perceive it as a prestige brand.

4 Results

We can observe different forms of network for each brand by visualizing co-purchased product network. Some brands can tell that customers perceive as the same position which company intends, but some brands are on totally different position. Figure 8 summarizes the result of network analysis and the networks of each brand are shown from figure 9 to figure 17. The different colors are assigned to each brand to visualize the distribution ratio of brands, and the component brands with exact percentage are on the left side of the figure as well.

	Prestige				Mid-end				
	Dior	YSL	CHANEL	GIORGIO ARMANI	NARS	BOBBI BROWN	laura mercier	MAC	MAYBELLINE
	Dior	YSL	Chanel	Giorgio Armani	Nars	Bobbi Brown	Laura Mercier	MAC	Maybelline
Prestige_total	92.77%	68.84%	60.74%	24.99%	4%	0.5%	0.5%	0.9%	0%
Prestige_Self	87.86%	61.32%	46.67%	15%	-	-	-	-	-
Mid-end_total	2.32%	7.24%	14.07%	22.49%	77.69%	91.28%	74.09%	88.48%	0.3%
Mid-End_Self	-	-	-	-	73.31%	82.54%	70.99%	85.15%	-
Mass_total	2.03%	17.34%	19.32%	49.13%	18.17%	7.97%	25.33%	11.15%	98.5%
Mass_Self	-	-	-	-	-	-	-	-	58.98%

Figure 8 Overview of the results

Among prestige brands, Christian Dior has consisted with the highest percentage of prestige brands, which are most of Dior itself. In other words, Dior's network is with similar levels of brands. However, Yves Saint Laurent and Chanel have around 60% of prestige brands, which is lower than Dior. If we consider the component ration of network, we can discover much of mass brands – such as VDL or Innisfree. Giorgio Armani has 24.99% of prestige brands which is the lowest percentage among this categorization, and even mass brands are the most of its peer brands. Traditional method to measure brand position of Armani evaluate their brand incorrectly. It means that no matter what advertisement and communication are conducted, Armani's peer brands are mass brands.

Figure 9 Christian Dior's Network

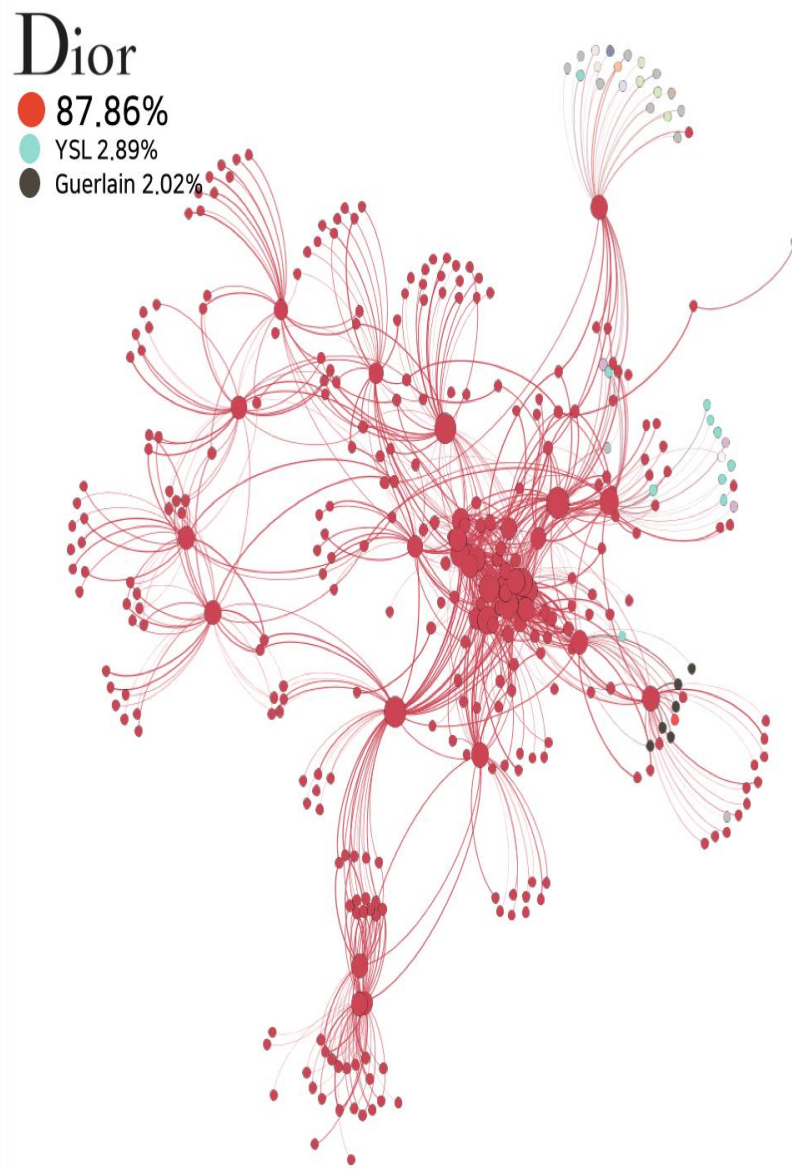


Figure 10 Yves Saint Laurent's network

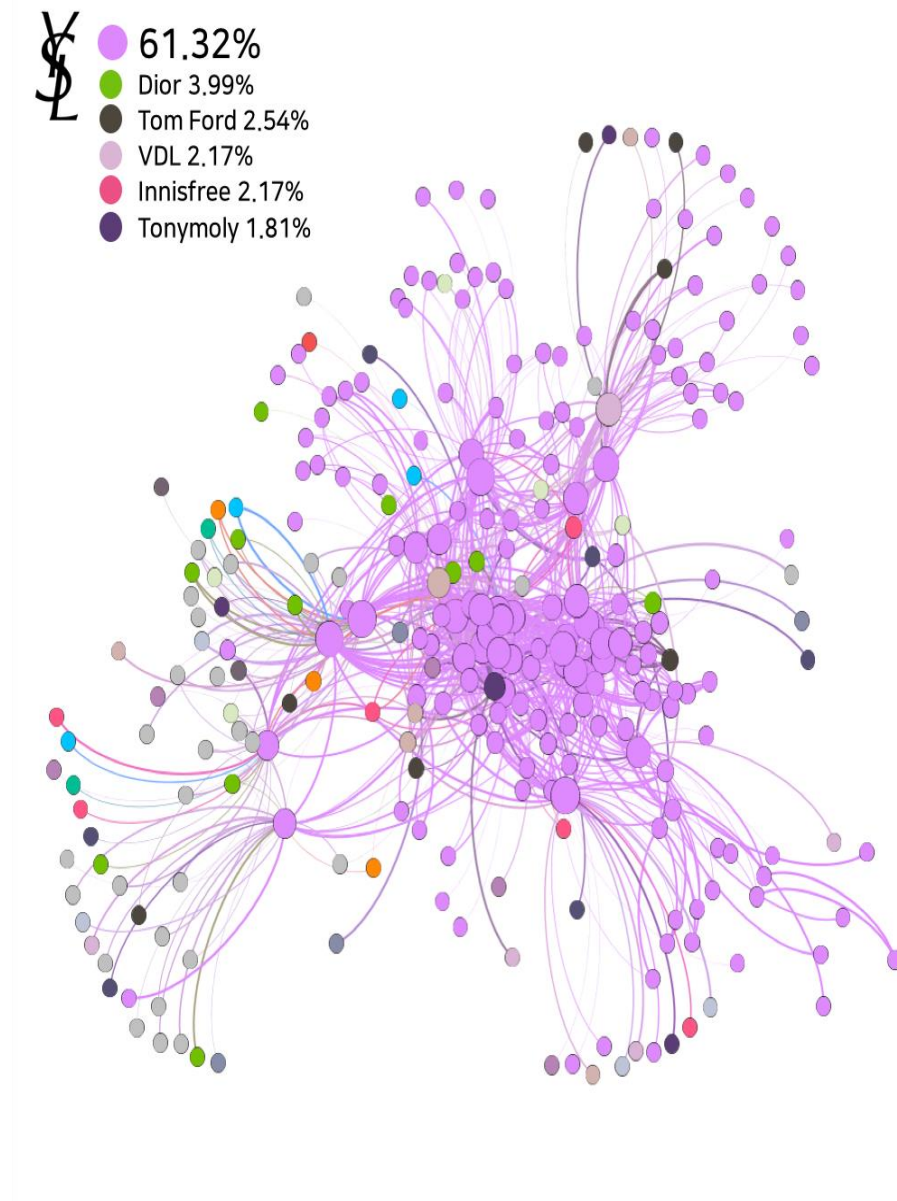


Figure 11 Chanel's network

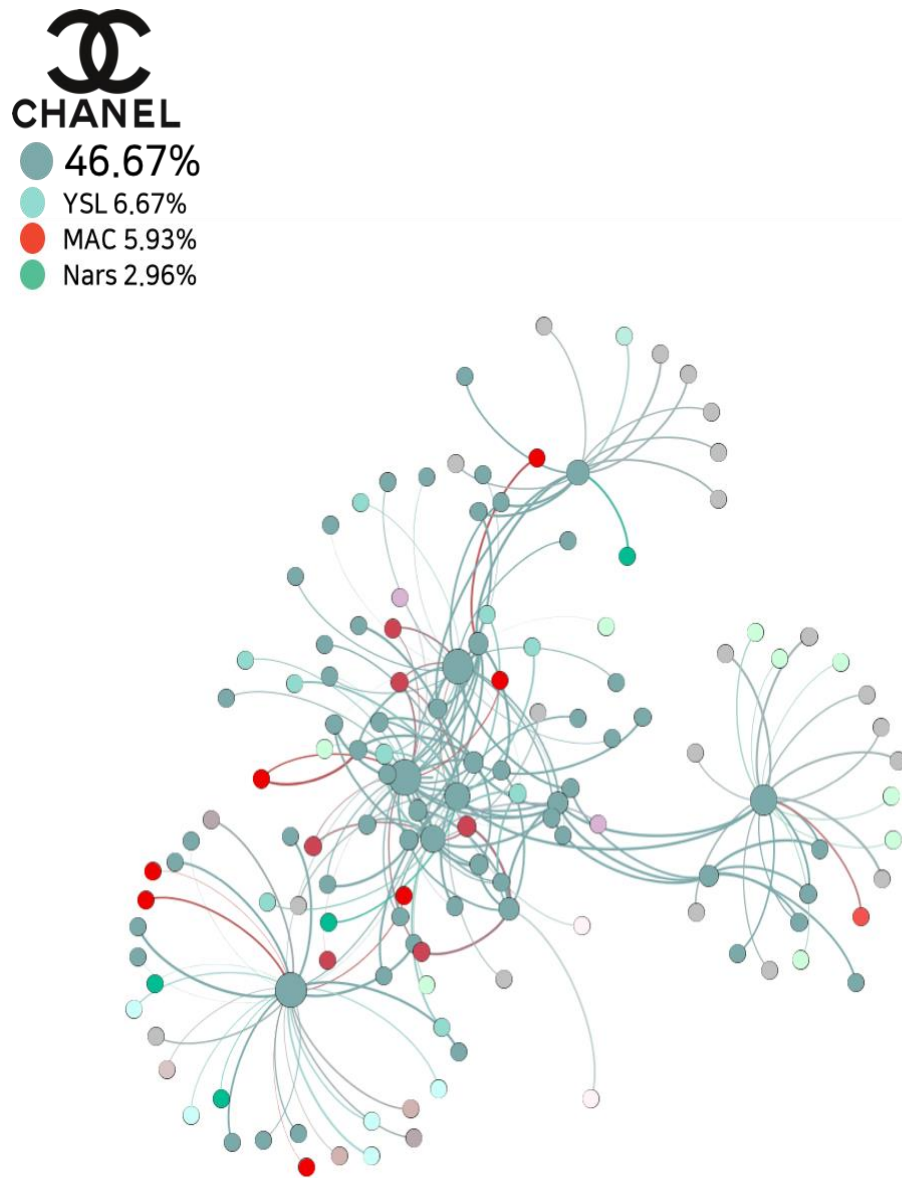
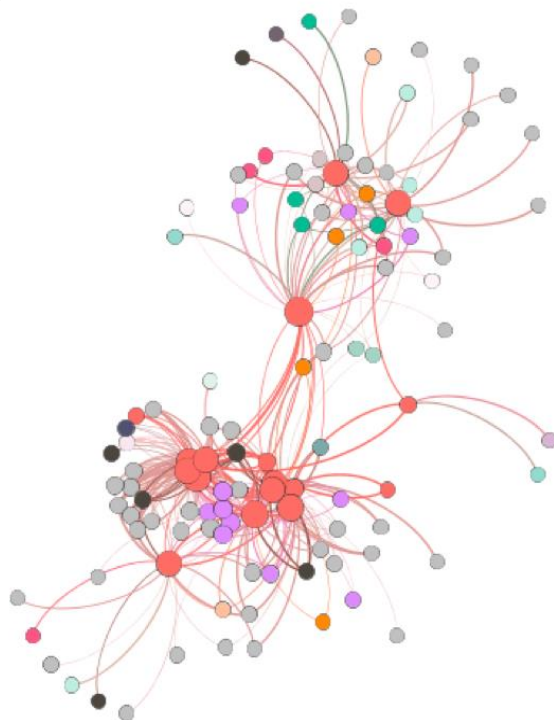


Figure 12 Giorgio Armani's network


GIORGIO ARMANI

- 15%
- Noubia 9.17%
- Nars 5%
- Nina Ricci 3.33%
- Bourjois 3.33%



Second, Bobbi Brown has consisted with the highest percentage of mid-end brands. Nars, Laura Mercier, and MAC have around 70% of mid-end brands, which can tell they are perceived as company' s communication strategy.

Figure 13 Bobbi Brown's network

BOBBI BROWN

82.54%
MAC 4.99%
Nars 1.25%

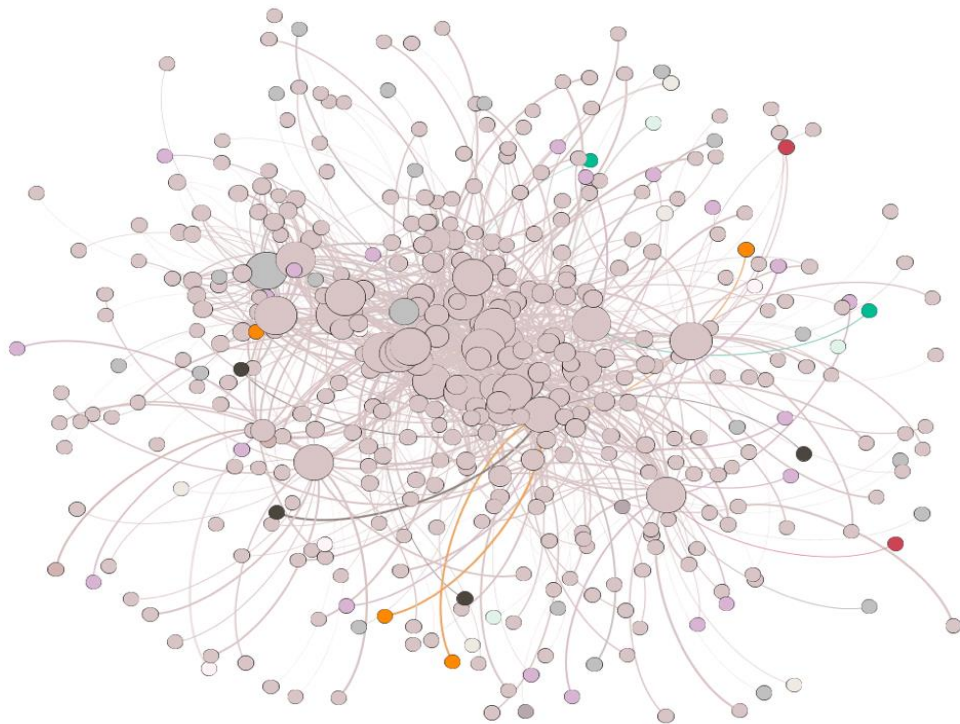


Figure 14 Nars' network

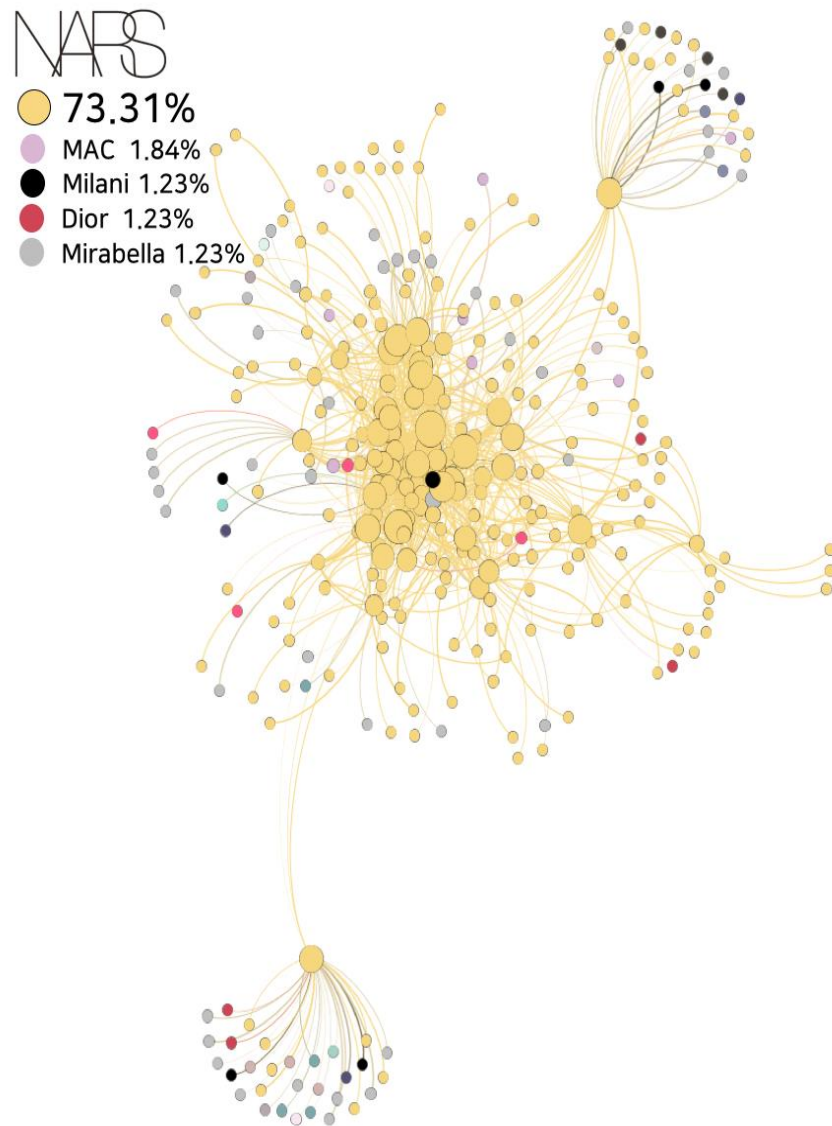


Figure 15 Luara Mercier's network

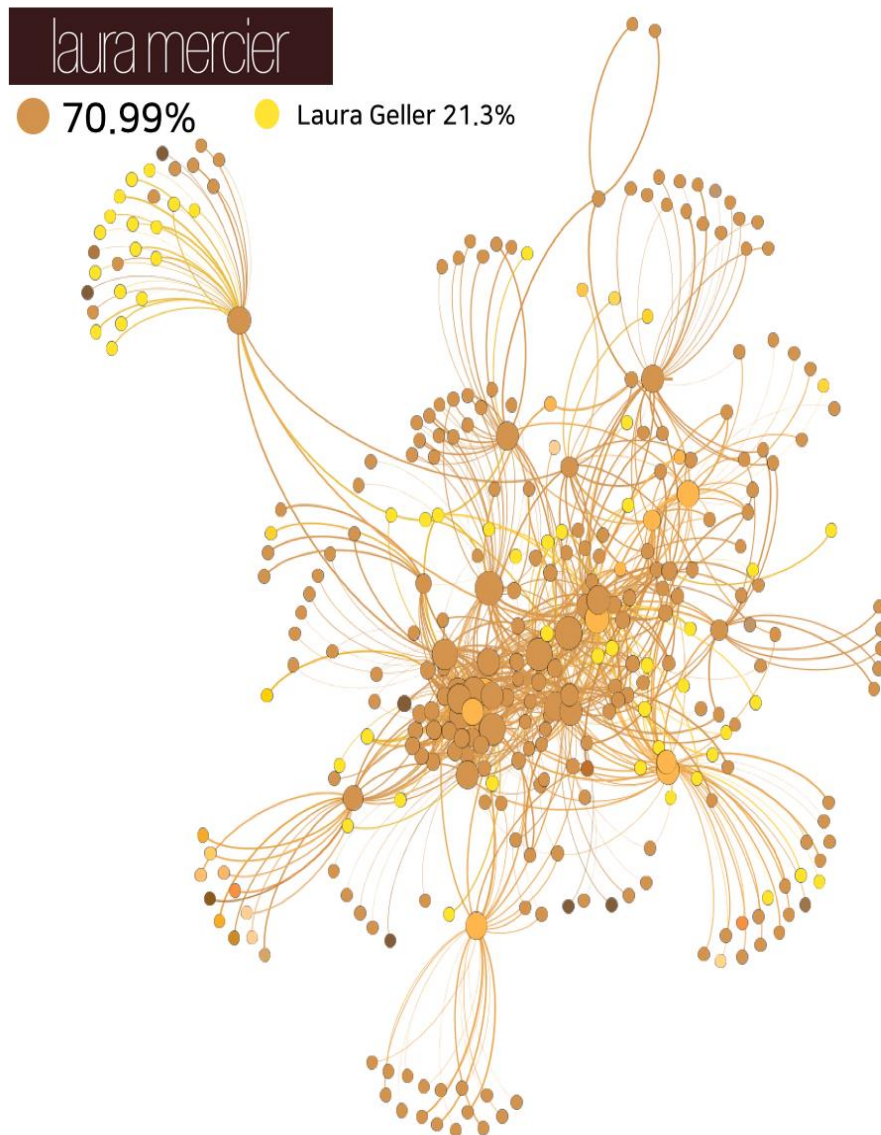
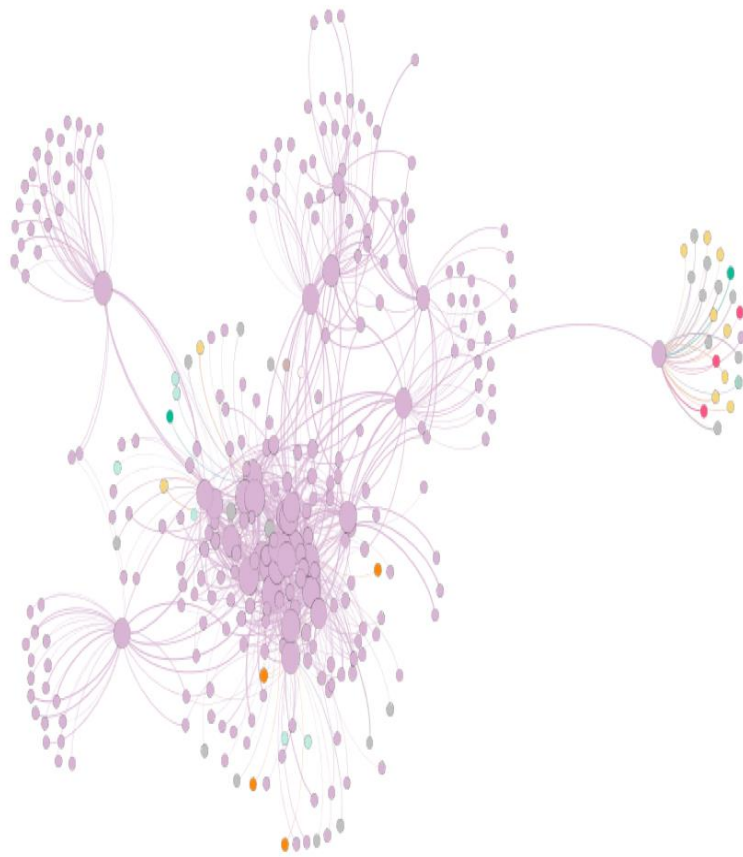


Figure 16 MAC's network

MAC

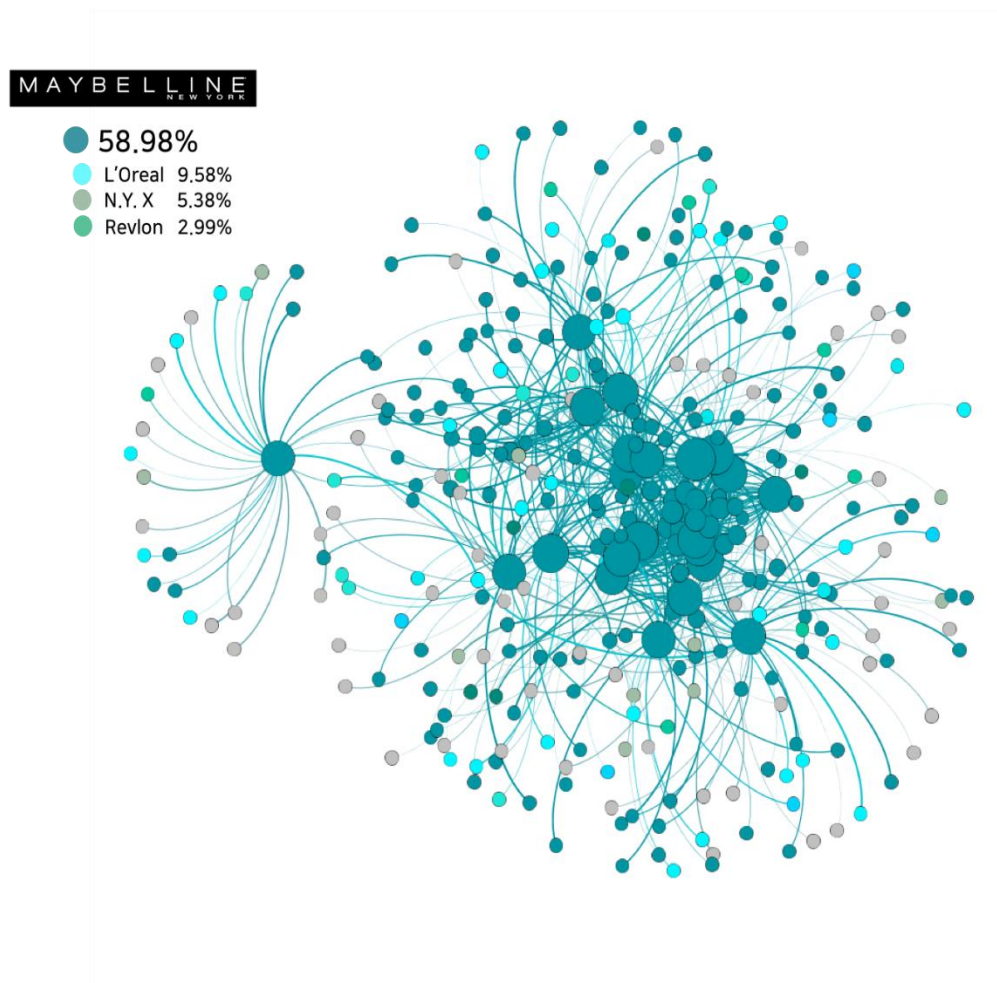
85.15%

Nars 3.03%



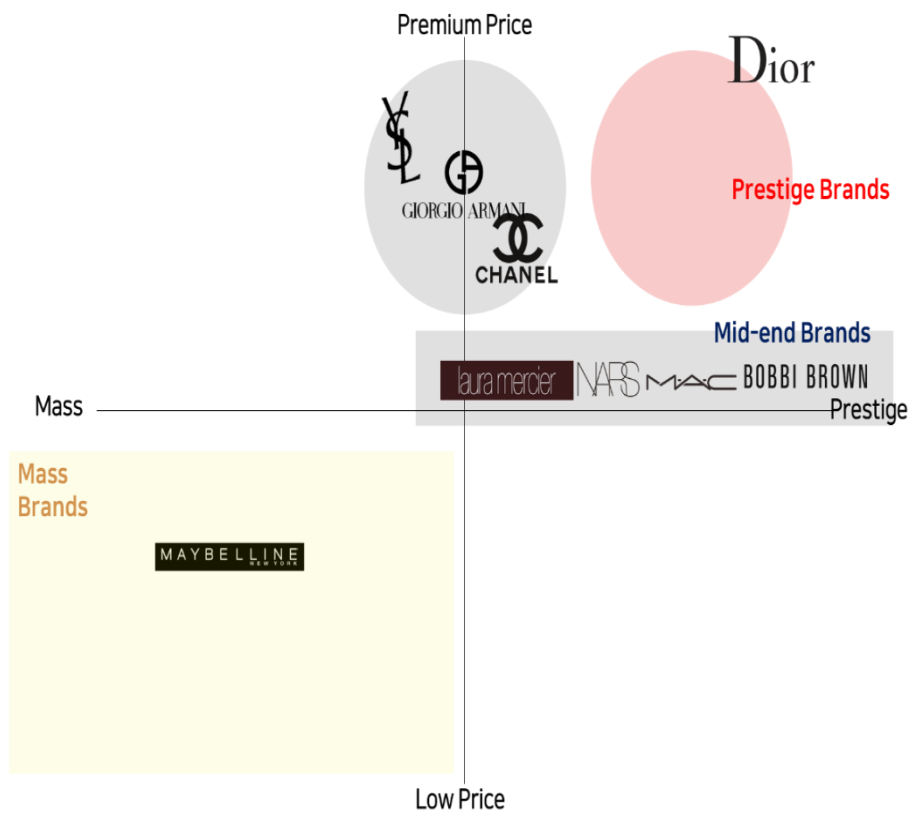
Lastly, Maybelline have almost 100% of mass brands' products.

Figure 17 Maybelline's network



In summary, we can confirm our hypothesis that traditional method cannot evaluate the brand value in network society. Some brands are not on the position of traditional method: YSL, Chanel, and Armani. In detail, the brands, which tell they are luxurious and high-class, are actually purchased with mid-end brands or mass brands a lot. Also, we can discover interesting fact that prestige brands are sold mostly with mid-end or mass brands, but there is no case that the lower level of brands are purchased with the prestige or mid-end brands. The results of our network-based analysis are shown as figure 18. Compare to the traditional positioning map, Yves Saint Laurent, Giorgio Armani, and Chanel moved to mid-end brands. Through this approach, managers will can check whether their position are on the intend position or not.

Figure 18 the result of network analysis



5 Conclusion

We introduce the first model of evaluating brand based on network analysis. This study extends the traditional conceptualization of brand equity and attempts to reflect the social change by adopting a network perspective. Based on the conceptualization, this paper proposes a more appropriate measure for brand image of brand equity in a digital connected world.

Our study also has a good practical implication for the decision makers in marketing field. By proposing a new measure that highlights the connection between brand equity and consumer purchase behavior, this perspective in turn provides insight to consider the new method to measure brand equity in the digital society. Especially, this method can help for marketers and business managers to recognize the actual image and position of their brands concisely, and it helps to manage their promotion, communication, or price strategy.

However, the further research is needed to demonstrate this method more, including much larger data source – such as other brands or categories of data or offline purchased data. Scaling up may be helped. Another idea of future study is to construct the brands' network including not only products but also customers' interaction. Customers share the information and emotions on the way to explore the products online, and they feel such as a sense of belongings of certain brands. For example, Apple and Xiaomi's fans spontaneously share the useful information or tips of using their device, and be a salesperson or technicians sometimes. As we can track the information between consumers on website, we can expand our framework by constructing brands' product and consumer's network, which gives more comprehensive understanding.

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국문 초록

네트워크 분석을 이용한 브랜드 이미지 측정 방법론 연구

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스마트폰의 등장으로 우리는 언제 어디서나 쇼핑이 가능하고, 소셜미디어로 연결된 광범위한 인적 네트워크와 웹사이트를 통해 손쉽게 다양한 정보와 전문가들의 의견을 살펴 볼 수 있게 되었다. 제한된 정보 창구로 인해 브랜드 인지도에 의존하였던 과거와는 완전히 다르게, 다양한 제품과 서비스에 대한 정보를 얻을 수 있는 창구가 매우 다양한 시대가 되었다. 그 결과 현재 디지털 시대에서는 소비자가 기업보다 우위에 있다. 우리는 더 이상 그 브랜드를 안다고 해서 혹은 그 브랜드가 유명하다고 해서 바로 구매를 하지 않는다. 즉, 전통적인 브랜드 측정 방법인 브랜드 인지도, 브랜드 가치, 브랜드 이미지, 혹은 브랜드 자산이 높다고 하여 실질적으로 구매로 이어지는지를 알 수 없게 되었다. 하지만 변화한 환경을

반영한 브랜드 정의나 측정방법이 연구되지 않았으며, 실무자들은 현재까지 전통적인 측정 방법을 이용하고 있다.

따라서 이 연구에서는 기존 브랜드 정의와 측정 방법의 문제점을 제기하고, 디지털 시대에서 이를 좀 더 직접적으로 평가할 수 있는 새로운 방법을 제시하고자 한다. 새로운 방법은 “친구를 보면 그 사람을 안다.”라는 속담처럼, 함께 구매되는 브랜드를 살펴봄에 해당 브랜드의 진정한 위치와 이미지를 파악하는 것이다. 이 연구에서는 온라인 커머스 사이트인 아마존에서 함께 구매되는 화장품 데이터를 브랜드 단위의 네트워크로 구축하고, 이를 토대로 브랜드를 평가하는 방법을 제시하였다. 소비자의 인식적인 측면을 설문 조사로 파악하거나 기업의 재무 상태를 통해 브랜드를 측정하는 과거의 방법과 달리, 제시된 방법은 실질적인 구매 데이터를 통해 구축된 제품의 네트워크를 분석함으로써 관련 브랜드 지표와 실질적인 구매 행동의 간극을 좁히고자 한 데에 의의가 있다.

해당 연구 주제는 선행 연구가 없으므로, 실증적 연구가 아닌 탐험적 연구를 진행하였다. 이 연구는 네트워크 관점을 바탕으로 전통적인 브랜드 개념을 변화한 세상을 반영하도록 확장하였으며, 보다 정확한 측정이 가능하여 해당 브랜드를 잘 관리할 수 있는 새로운 방법론을 제시하였다.

주요어 : 브랜드, 브랜드 이미지, 전자상거래, 네트워크 분석, 공동 구매
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